

Correction of Rectal Prolapse by Anterior Resection

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During the past three consecutive years low anterior resection with rectopexy has been used to correct complete rectal prolapse in nine patients. There have been no recurrences and only two complications, one a presacral abscess not related to anastomotic malfunction, and the other a fecal fistula in an 81-year-old woman, which resolved spontaneously without colostomy.

RECTAL PROLAPSE is an abnormal falling-down of all three layers of the rectum or rectosigmoid colon. Generally, three diagnostic types or classes are recognized. Class I, or mucosal prolapse, involves only a 2 or 3 cm length of protruded surface tissue of the anorectum. This is in all probability a hemorrhoidal prolapse and is not considered a true rectal prolapse. Class II probably represents an early stage of complete prolapse, in which intussusception of some degree of the rectosigmoid has occurred, but without protrusion through the anal orifice. Even though this stage produces symptoms, visual diagnosis is unusual. Class III is a complete protrusion (procidencia) of intussuscepted rectum through the anal canal, with or without a concomitant pouch of Douglas sliding hernia. Rectal prolapse is uncommon, occurs most often in persons between ages 50 and 80, and predominantly affects women. Psychiatric patients in institutions and persons who damage the cauda equina or sacral nerves

also have a higher incidence of rectal prolapse. In the sixteenth century, Ambroise Paré¹ described rectal prolapse in just such nerve-damaged patients.

Largely through the work of Moschcowitz² in 1912, modern surgeons have operated on the anatomic basis that complete prolapse was primarily a cul-de-sac sliding hernia with the protruding rectum composing the posterior hernial wall. Until recently, then, many surgical procedures²⁻⁵ have attempted mainly to repair an attenuated levator sling and endopelvic fascia, and to obliterate the hernial sac, while giving only secondary attention to the rectum itself. With the introduction of anterior resection as a new surgical treatment for this problem by Stabins⁶ in 1951, and the later advocacy of this method by Muir,¹ Bacon,⁷ and Beahrs and Hill,⁵ a gradual awareness has developed that intussusception and improper alignment of redundant rectosigmoid colon are the initial anatomic defects. The weakened pelvic floor musculature and patulous anal sphincters usually may be considered secondary developments. That at least 50 different procedures exist to correct this problem exposes the quandary created by etiologic uncertainties.^{5,7}

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Figure 1.—The patient was a 53-year-old white man with 12 cm protruded prolapsed rectum, whose "hemorrhoids" had worsened during the preceding six months. The lesion appeared beefy red and was decidedly edematous. Soiling and bleeding were recent complaints.

Recent investigations of the physiology of continence and defecation^{5,8,9} have given us insight enough to realize that functional as well as anatomic components act to produce the incontinent patient with rectal prolapse. According to Todd,¹⁰ Ripstein,¹¹ Broden and Snellman,⁸ and Nigro,¹² normal mechanisms of defecation require intact neural receptors and pathways, and normoreactive anorectal smooth and striated musculature. The usual patient with rectal prolapse has a depressed, or asynchronous, urge to defecate. A long history of severe chronic straining, poorly developed bowel habits, constipating diets, and regular use of laxatives⁹ is often elicited. Thomas¹³ postulated a correlation between decreased rectal sensory appreciation and a chronically distended rectum. Ill-timed conscious cortical control of sphincters which repeatedly oppose the involuntary, possibly humorally induced,¹⁴ muscle action of the colorectum surely adds to the complex processes that bring about rectal prolapse. When such an afflicted patient increases his intra-abdominal pressure even slightly by coughing or laughing, for example, the redundant rectum is seen to lose its once normal horizontal position on the sacral hollow and assume a straightened, anterior position. This motion allows easy passage of stool and rectum through patulous anal sphincters. For repair of this condition, a procedure in which low

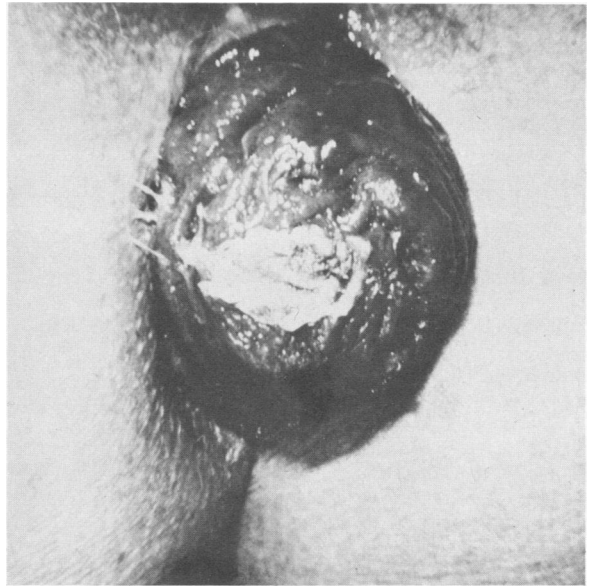


Figure 2.—Rectal protrusion of 10.5 cm in a 77-year-old white woman. Incontinence had been present for two years and was gradually worsening.

anterior resection and rectopexy removes the redundant rectosigmoid and replaces the rectum into the sacral hollow, has been used with favorable results at the Santa Barbara Cottage Hospital.

Cases and Techniques

Between July 1970 and January 1974, nine patients with complete rectal prolapse were operated upon by one of us (P.K.C.) using low anterior resection and rectopexy. Follow-up by physical examination of all patients in office was completed to January 1974. Three patients were operated upon more than two and a half years ago, three more than one and a half years ago, and three within the year preceding the last date of follow-up. No deaths have occurred to date.

There were eight women and one man. Three were between 21 and 31 years of age, two between 50 and 60, and four between 67 and 81.

Four of the nine patients had had from one to four previous other procedures for the condition, and three of the four had had earlier hemorrhoidectomy by "amputative excision of hemorrhoids." Two had had unsuccessful Altemeier procedures and two had had recurrences after Thiersch wire or Mersilene sling placement around the anal orifice.

The range of lengths of the prolapsed section at the time of operation was 8 to 15 cm (Figures 1 and 2). The duration of prolapse from the time

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TABLE 1.—*Collected Results in Operations for Rectal Prolapse (1972)*

(From Theuerkauf, Behrs, and Hill, adapted and brought up to date)*

	<i>Patients</i>	<i>Mortality (Percent)</i>	<i>Recurrence (Percent)</i>
Thiersch—Wire anoplasty	114	..	68.0
Delorme—Perineal rectal plication	336	2.4	25.0
Miles-Gabriel—Perineal rectosigmoidectomy	507	0.6	40.8
Altemeier—Perineal rectosigmoidectomy	119	..	6.7
Dunphy—Two-stage perineal-abdominal operation	29	..	3.4
Moschcowitz—Obliteration of cul-de-sac	128	2.3	47.8
Pemberton—Suspension-fixation	250	0.4	18.9
Kummel—Suspension-fixation (alcohol injection)	1,029	1.3	12.4
			(7.7)
Graham-Goligher—Repair of pelvic floor	217	2.8	8.0
Orr—Suspension fascia lata slings	62	..	5.0
Nigro—Levator sling	5
Anterior or sigmoid resection, fixation	202	2.0	3.6
Wells—Ivalon sponge wrap	109	3.7	1.9
Ripstein—Fascia lata/teflon hammock	128	0.8	0.7
Devadhar—Reversed intussusception, plication	28	3.6	..

*Compiled by Steichen.¹⁸

of first protrusion ranged from 8 months to 21 years. One young woman said she had "always" had the prolapse, and for a long time thought it was a normal condition. Most of the older patients had not noted onset of protrusion until their middle or later years.

Surgical Procedure

All of the patients had a 48-hour preoperative mechanical and antibiotic bowel preparation. Their diet was changed from low residue to clear liquids the day before and cleansing enemas were administered the morning of operation. During the later period of the time covered by this report, antibiotics were given intravenously 12 and 6 hours before operation, and administration was continued during the procedure and for three to five days thereafter.

The dissection procedure used was as described by Mayo.¹⁵ In the procedure as we used it, it is very important to mobilize the rectum all the way down to the tip of the coccyx, as in the Miles' abdominoperineal resection, sacrificing the "lateral rectal stalks" and the middle hemorrhoidal pedicles. An adequate rectal segment, at least 5 cm, is preserved and "fixed" into the presacral hollow with non-absorbable suture material (2-0 silk). The redundant bowel is excised and the anastomosis should be established at a convenient site in the sigmoid or rectosigmoid area rather than deep in the pelvis. This allows adequate anastomosis with minimal risk of leakage or other anastomotic complications. If a definite palpable

superior hemorrhoidal vessel can be followed to the distal rectal stump, it and the mesentery are preserved, thus creating a modified mesenteric tube vessel graft to ensure blood supply to the distal stump. This step may be unnecessary but it seems to allow preservation of a longer rectal segment which otherwise could become non-viable after sacrifice of the middle hemorrhoidal pedicles. After obliteration of any existing "cul-de-sac defect," reperitonealization is performed below the site of anastomosis. Drains are usually placed into the sacral hollow and in the vicinity of the fixed anastomotic junction. They are removed as drainage subsides. The patients are given nothing by mouth until bowel activity returns and then are graduated from clear liquids to moderate residue diet on dismissal from the hospital.

Results

No deaths have occurred. There were only two postoperative complications. A fecal fistula manifesting itself on the ninth postoperative day resolved after three weeks of antibiotics and conservative management. The second complication was a presacral abscess occurring on the eighth postoperative day. Since it was determined by roentgenographic contrast study not to be related to malfunction of anastomosis, surgical drainage through the posterior rectal wall below the anastomotic junction was carried out. Fever, diarrhea, and sacral pain cleared after five days of antibiotics and enteric rest.

The average length of hospital stay was 16

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days, not including the two complicated cases, in which 38 and 25 hospital days were required.

There were no recurrences, not even mucosal prolapse, as of January 1974. This result is encouraging in view of the fact that recurrences from six months to two years postoperatively are common.⁵ Precise assessment of degree of continence is difficult, but all patients have enjoyed improvement of function with no soiling or bleeding since discharge from hospital. Certainly none were made worse. Most are greatly relieved and consider the operation a thorough success. Best results were obtained in patients with the least degree of incontinence and the best sphincter tone preoperatively.

Comments

A review of all existing procedures for rectal prolapse is not the purpose of this paper. However, a table of mortality and recurrence rate associated with various widely used procedures (compiled by Steichen¹⁶) is included for comparison. (See Table 1.) Anterior resection compares favorably with other operations in most respects.^{5,16} This procedure has a great advantage

over others in that it is not technically difficult and is a well known operation for other diseases of the rectosigmoid colon.

REFERENCES

1. Muir EG: Treatment of complete rectal prolapse in the adult. *Proc R Soc Med* 55:1086-1087, Dec 1962
2. Moschcowitz AV: The pathogenesis, anatomy and cure of prolapse of the rectum. *Surg Gynecol Obstet* 15:7-21, Jul 1912
3. Graham RR: The operative repair of massive rectal prolapse. *Ann Surg* 115:1007-1014, Jun 1942
4. Altmeier WA, Culbertson WR, Schowengerdt C, et al: Nineteen years' experience with the one-stage perineal repair of rectal prolapse. *Ann Surg* 173:993-1001, Jun 1971
5. Theuerkauf FJ Jr, Beahrs OH, Hill JR: Rectal prolapse: Causation and surgical treatment. *Ann Surg* 171:819-835, Jun 1970
6. Stabins SJ: A new surgical procedure for complete rectal prolapse in the mentally ill patient (Case report). *Surgery* 29:105-108, Jan 1951
7. Castro AF (moderator): Symposium: Procidentia. *Dis Colon Rectum* 15:329-356, Sep-Oct 1972
8. Broden B, Snellman B: Procidentia of the rectum studied with cineradiography—A contribution of the discussion of causative mechanism. *Dis Colon Rectum* 11:330-347, Sep-Oct 1968
9. Swinton NW Sr, Scherer WD: Complete rectal prolapse or procidentia. *Geriatrics* 23:113-117, Nov 1968
10. Todd IP: Etiological factors in the production of complete rectal prolapse. *Postgrad Med J* 35:97-100, Feb 1959
11. Ripstein CB, Lanter B: Etiology and surgical therapy of massive prolapse of the rectum. *Ann Surg* 157:259-264, Feb 1963
12. Nigro ND: Procidentia: The etiology of rectal procidentia. *Dis Colon Rectum* 15:330-333, Sep-Oct 1972
13. Davidian VA Sr, Thomas CG Jr: Trans-sacral repair of rectal prolapse. Efficacy of treatment in thirty consecutive patients. *Am J Surg* 123:231-235, Feb 1972
14. Hagihara PF, Griffen WO Jr: Physiology of the colon and rectum. *Surg Clin North Am* 52:797-805, Aug 1972
15. Mayo CW: Surgery of the small and large intestine. In: *The Handbook of Operative Surgery*, 2nd Ed. Chicago, Year Book Medical Publishers, Inc., 1962, pp 226-237
16. Steichen FM: Rectal prolapse. *Contemporary Surgery* 3:53-60, 1973